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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,635	01/02/2002	Charles T. Black	YOR9-2001-0319-US1	9290

7590 09/08/2004
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EXAMINER

JOHNSTON, PHILLIP A

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,635

Applicant(s)

BLACK ET AL.

Examiner

Phillip A Johnston

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

1. This Office Action is submitted in response to RCE / Amendment filed 6-25-2004, wherein claims 1,10,24-28, and 30-36 have been amended and claim 37 has been added. Claims 1-37 are pending.

Claims Rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5,7-18,20,24-27, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No. 2004/0131843 to Mirkin, in view of Mirkin, U.S. Patent Pub. No. 2002/0063212.

Mirkin (843) discloses the following;

(a) An apparatus and method for dip pen lithography where a probe tip is coated with a pattern compound that includes a nanoparticle containing additive. The coating is applied by dipping the probe tip in a solution of the pattering compound, as recited in claims 1,2,10-15,20,24-27, and 37. See paragraphs [0015], [0053], and [0093];

(b) A variety of patterning compounds that include nanoparticles, as recited in claims 3,5, and 6. See paragraphs [0056] – [0072], [0081] and [0089].

(c) The use of 13 and 20 nm nanoparticles, as recited in claim 4. See paragraphs [0109] and [0114].

Mirkin (843) discloses the claimed invention except for having a specific value of length vs. width that is less than 15%, as recited in claims 1,10 and 24-28. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a nanoparticle having a value of length vs. width that is less than 15%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Mirkin (843) as applied above fails to teach the attachment of a single nanoparticle or single nanoparticle layer, as recited in claims 7-9, and 16-18. However, Mirkin (212) discloses the formation of a single-nanoparticle array using dip pen lithography. See paragraph [0049].

Therefore it would have been obvious to one of ordinary skill in the art that the nanolithography apparatus and method of Mirkin (843), can be modified to use the single nanoparticle deposition method of Mirkin (212), to provide submicrometer arrays thereby allowing identification of chemicals present in the sample areas, including sequencing of nucleic acids.

4. Claims 6,19,21-23,28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mirkin (843), Mirkin (212) and in further in view of Colbert, U.S. Patent Pub. No. 2003/0106998.

The combination of Mirkin (843) and Mirkin (212) fails to teach the use of adhesion layers and annealing; however, Colbert (998) discloses;

(a) The use of thin adhesive layers prior to coating the probe tip with nanoparticle solutions, as recited in claims 6 and 19. See paragraph [0055].

(b) The use of UV and annealing as recited in claims 21-23. See paragraphs [0055]-[0058] and [0168].

(c) Dipping a probe tip into electrochemical solution and applying electrical potentials to the probe, as recited in claims 14, 15, 28 and 29. See paragraph [0034] and [0060].

Therefore it would have been obvious to one of ordinary skill in the art that the nanolithography apparatus and method of Mirkin (843), and Mirkin (212) can be modified to use the probe tip attachment methods of Colbert (998) to provide strong, reliably mounted probe tips thereby improving conventional microscopy techniques.

5. Claims 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mirkin (843), Mirkin (212) and Colbert (998), and in still further view of Requicha, U.S. Patent No. 6,508,979.

The combination of Mirkin (843), Mirkin (212) and Colbert (998), as applied above fails to teach the use of spherical nanoparticles. However, Requicha (979) discloses spherical gold nanoparticles between 5 and 30 nm. See Column 2, line 45-50.

Therefore it would have been obvious to one of ordinary skill in the art that the nanolithography apparatus and method of Mirkin (843), Mirkin (212) and Colbert (998)

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can be modified to use the spherical nanoparticles of Requicha (979), to provide a nanolayer and sacrificial layer thereby providing a second surface on which a next nanolayer is constructed.


Conclusion

6. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (571) 272-2477. The fax phone number for the organization where the application or proceeding is assigned is 703 872 9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

August 24, 2004


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800